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IDENTIFICATION OF COMPUTERSINTRODUCTION

This invention relates to the identification of a computer when logging onto a remote site. More specifically, the invention relates to the identification of such a computer without requiring the use of user identification data, such as a personal identification number (PIN) or the like.

BACKGROUND TO THE INVENTION

- 5 Computer users commonly log onto remote sites such as an Internet web site in order to perform transactions, which involve payments from the user for goods or services to be delivered by or through the web site. The remote site may for example be a web site that provides software for download by a user logging onto the site, and paying a required licence fee by credit card.

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One of the difficulties experienced by providers of such on-line services is the identification of the user logging on to the associated remote site, for the purposes of credit control and for marketing information.

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In most cases, some information has to be provided by the user before credit will be granted or the purchase can be effected, but the medium of payment lends itself to fraudulent input. A user paying by means of credit or debit cards is not physically present when the transaction is concluded, and this enables the user to decline the purchase when the payment is presented to him by the account holder of the card facility. The provision of this user information also adds to the tedium of usage when a customer logs onto a commercial site.

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International Patent No. WO99/26123 discloses a method and a system for preventing an authorised installation or running of a program on a computer. A unique identifier associated with the computer is generated as an encrypted function of an identifying element associated with the computer, such as a hard disk serial number, and an identifying element associated with the program. The encrypted data is decrypted at the computer and installation of the program is prevented if the computer identifying element is not equivalent to, or derivable from, the decrypted data. A substantially similar method of preventing use of software on an authorised computer is taught in International Patent No. WO95/35533.

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Both of these methods, while suggesting the generation of a unique identifier as a function of characteristics derived from computer hardware, are directed at preventing installation of a software program on a particular hard disk of a computer, and not at positively

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5 identifying a particular computer connected to a network
to prevent fraud in online commercial transactions
conducted with the use of debit or credit cards.

OBJECT OF THE INVENTION

10 It is an object of this invention to provide a method of
and system for identifying a computer connected on-line
to a remotely located site, which can at least partially,
alleviate the above-mentioned difficulties.

SUMMARY OF THE INVENTION

15 In accordance with this invention there is provided a
method of identifying a computer connected on-line to a
remotely located site, comprising the steps of:
20 searching a hard disk associated with the computer for an
identifying element inherent to the computer;
combining such an identifying element, when found,
together with other identifying information associated
with the hardware of the computer, to form a unique
identifier for that computer;

comparing the unique identifier for the computer to a store of such unique identifiers available to the remote site;

if the unique identifier is present in the store, matching it to data which is available to the remote site and which is associated with that unique identifier; and

5 if the unique identifier is not present in the store, then storing it in the store, and recording against it data associated with that computer.

There is provided for the identifying element that is searched for on the hard disk to be a predetermined number such as a serial number of the hard disk, or another such number which is unique to the hardware of the computer.

10 There is particularly provided for the other identifying information to be information that is associated with the geometry of the hard disk, for example the number of sectors, platters and cylinders in the disk.

Preferably, the combining function is performed on the computer, and the unique identifier is sent to the remote site, from where it is compared to the store.

15 Still further features of the invention provide for the data relating to that computer, and against which the unique identifier is stored to include data relating to a credit record of previous transactions effected from that computer, or relating to further data associated with such previous transactions, such as credit card details used during such previous transactions

20 The invention extends to a method of creating a unique identifier for a computer, comprising the steps of:
finding an identifying element inherent to the computer; and

combining it together with other identifying information associated with the hardware of the computer, to form a unique identifier for that computer.

Preferably, the combining function is an encryption process, and is a 'hash; - type encryption.

5 This invention includes a system for identifying a computer connected on-line to a remotely located site, comprising:

searching means for searching a hard disk associated with the computer for an identifying element inherent to the computer;

10 combining means for combining such an identifying element, when found, together with other identifying information associated with the hardware of the computer, to form a unique identifier for that computer;

a database of unique identifiers for computers, the database being available to the remote site and having data associated with each such unique identifier; and

15 comparator and operator means for matching the unique identifier with one in the database of such unique identifiers, and with the data which is associated with a matched unique identifier, and for storing an unmatched unique identifier in the database and recording against it data associated with that computer.

20 There is provided for the searching to be arranged to establish a predetermined type of number such as the serial number of the hard disk of the computer as the identifying element, or to establish such other mark or number which is inherently particular to hardware connected to the computer.

There is particularly provided for the searching means to be arranged to establish the other identifying information in the form of information that is associated with the

geometry of the hard disk of the computer, preferably including the number of sectors, platters and cylinders in the hard disk.

The invention extends to a system for creating a unique identifier for a computer, comprising:

5 searching means for finding an identifying element inherent to the computer; and
combining means for combining the identifying element together with other identifying information associated with the hardware of the computer, to form a unique identifier for that computer.

BRIEF DESCRIPTION OF THE DRAWINGS

10 A preferred embodiment of the invention is described below, by way of example only, and with reference to the accompanying drawing which is a functional block diagram of a system in accordance with the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

15 Referring to the drawing, a remotely located computer (1) equipped with a hard disk can dial up through a telecommunication channel, indicated figuratively by line (2), to an Internet web site (3). The telecommunication line can be a conventional public switched telephone line with a modem facility associated therewith. The Internet web site (3) has the usual computer facilities associated with such a web site, namely a web server and an application server (not shown) and is connected to a database (4), for storing identifying markers and data associated therewith.

In use, a user logs onto the Internet web site (3) through the telecommunication channel (2) from the computer. The user in this instance will download software from the Internet web site (3), which is required to enable the user to purchase e-cash to perform gambling transactions on an on-line computer-based casino. Clearly the e-cash could be used for any transaction on the Internet. The actual casino need not of course be located at the Uniform Resource Locator (URL) of web site, but the software is downloaded from this web site.

Once downloaded, the software is activated and logs on to the Internet web site. It searches for the serial number of the computer's hard disk. The serial number is generally a 32-bit number which can be accessed through operating system software of the computer (1), such as the MS-DOS command "VOL" which displays the serial number in hexadecimal format as an eight character string. The software also establishes the number of sectors, platters and cylinders of the hard disk geometry. The serial number and the numbers relating to the hard disk geometry are combined in a hash encryption function to produce a unique identifier of that computer. The resultant encrypted output will provide a one in 2^{32} protection against a coincidence of the identifier from different computers.

The software transmits the identifier back to Internet web site (3) along the telecommunication channel. This unique identifier is then compared with other identifiers stored in the database (4) to see whether or not it is present. If the unique identifier is not in the database (4) it will be recorded as a new entry, and will be stored against a history of the transactions performed by any user at the remote computer (1).

When the remote computer (1) subsequently connects again to the remote site, or a user is gambling with the downloaded software, the unique identifier is recreated and is

transmitted to the Internet web site (3) for authentication. If the unique identifier is present in the database (1), the history of previous transactions from this computer can be examined.

5 If the user at the remote site has defaulted on a payment, or otherwise transgressed licensing or other limitations imposed by the licence terms of the Internet web site (3), then the web site can make a commercial decision on the log-on from the remote computer (1).

The transaction may be declined, or may be accepted with or without conditions.

10 It is considered that the invention forms a useful method and system for identifying computers that are logging on from remote sites to effect transactions. It will be appreciated that the method can be used for identifying a computer for any form of on-line interaction or transaction, and is not restricted to use in the environment described with reference to the drawings. Also, the software used to create the unique identifier need not be downloaded from an Internet web site but could, for example, be provided
15 as part of a transaction processing package and be installed by a user on his computer.